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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,591	02/23/2004	Charles Black	YOR920010225US2	9561
47939	7590	06/08/2006	EXAMINER	
CONNOLLY BOVE LODGE & HUTZ LLP (IBM YORKTOWN)			GOODWIN, DAVID J	
1990 M STREET, NW			ART UNIT	
SUITE 800			PAPER NUMBER	
WASHINGTON, DC 20036-3425			2818	

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EJ

Office Action Summary	Application No.	Applicant(s)	
	10/784,591	BLACK ET AL.	
	Examiner	Art Unit	
	David Goodwin	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 1-18, 38-41 and 47-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-37, 42-46, 50-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/8/05 2/23/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 19 through 37, 42 through 46 and 50 through 52 in the reply filed on May 11, 2006 is acknowledged.

Double Patenting

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 19 through 36 and 50 through 52 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 19 through 36 and 40 through 42 of prior U.S. Patent No. 6,737,364. This is a double patenting rejection.

4. Claims 19 through 36 of the application and of US 6,737,364 claim:

19. A thin film fabricated on a substrate by the method which comprises:
depositing a plurality of nanoparticles initially on a solvent
onto said
substrate in such a way that said nanoparticles form a monolayer
on said
substrate; wherein said nanoparticles are coated with an
organic surfactant,
and wherein said nanoparticles are electrically insulating with
relative
dielectric constant greater than 10.

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20. The thin film of claim 19, wherein a percentage of said thin film comprised of said nanoparticles is in a range of about 50% to about 100%.

21. The thin film of claim 19, wherein said nanoparticles have a diameter size in the range between about 2 nm to about 20 nm.

22. The thin film of claim 21, wherein a distribution of said diameter size in said thin film has a standard deviation selected from the group consisting of: less than 15%, less than 10% and less than 5%.

23. The thin film of claim 19, wherein said monolayer of nanoparticles is subsequently heated.

24. The thin film of claim 19, wherein said nanoparticles are composed of a perovskite-type oxide having the formula ABO_3 , wherein A is at least one additional cation having a positive formal charge in the range between about 1 to about 3; and wherein B is at least one acidic oxide having a metal selected from the group consisting of: Group IVB, VB, VIB, VIIB, IIIA, and IB.

25. The thin film of claim 19, wherein said nanoparticles are a perovskite-type oxide selected from the group consisting of: a titanate-based ferroelectric, a manganate-based material, a cuprate based material, a tungsten bronze-type niobate, tantalate or titanate, or a layer bismuth tantalate, niobate, or titanate.

26. The thin film of claim 19, wherein said nanoparticles are a ferroelectric material selected from the group consisting of: bismuth titanate,

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strontium bismuth tantalite, strontium bismuth niobate, strontium bismuth tantalite niobate, lead zirconate titanate, lead lanthanum zirconate titanate, lead titanate, bismuth titanate, lithium niobate, lithium tantalite, strontium rhuthenate, barium titanite, strontium titanate and compositions of these materials modified by incorporation of a dopant.

27. The thin film of claim 19, wherein said nanoparticles are formed via a non-aqueous chemical process that injects metal oxide precursors at temperatures in a range between about 60.degree. C. to about 300.degree. C., or where said precursors are added at low temperature and then heated to between about 60.degree. C. to about 300.degree. C.

28. The thin film of claim 19, wherein said nanoparticles are formed in a predetermined crystalline phase by either synthesizing or heating.

29. The thin film of claim 23, wherein said heating of said nanoparticles is carried out at temperatures in the range between about 100.degree. C. to about 800.degree. C.

30. The thin film of claim 23, wherein said heating of said nanoparticles is carried out at temperatures in a range between about 300.degree. C. to about 650.degree. C.

31. The thin film of claim 23, wherein said heating of said nanoparticles is carried out using irradiation from a source selected from the group consisting of: laser, microwave, electron beam and ion beam.

32. The thin film of claim 23, further comprising the step of repeating

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said depositing and heating steps, thereby increasing thickness of said thin film.

33. The thin film of claim 19, further comprising the step of depositing said solution on a liquid subphase.

34. The thin film of claim 33, further comprising the step of evaporating said solvent deposited on said liquid subphase, thereby forming said monolayer of said nanoparticles packed closely at a liquid-air interface of said liquid subphase, and wherein said depositing step transfers said monolayer of nanoparticles to said substrate.

35. The thin film of claim 34, wherein a percentage of said thin film comprised of said nanoparticles is in a range of about 25% to about 75%.

36. The thin film of claim 23, wherein said heating step removes said surfactant.

5. Claims 50 of the application and 40 of US 6,737,364 claims

The thin film of claim 19, wherein a percentage of said monolayer comprised of said nanoparticles is in a range of about 50% to about 60%.

Claims 51 of the application and 41 of US 6,737,364 claims

The thin film of claim 23, wherein a percentage of said thin film comprised of said nanoparticles is in a range of about 90% to about 100%.

Claims 52 of the application and 42 of US 6,737,364 claims

The thin film of claim 23, wherein a percentage of said monolayer comprised of said nanoparticles is in a range of about 50% to about 60%.

6. Claims 42 through 46 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1 through 5 of prior U.S. Patent No. 7,041,607. This is a double patenting rejection.

7. Claim 42 of the application and claim 1 of 7,041,607 claims

(42/1) A field effect transistor comprising: a source region and a drain region; a channel region comprising a semiconductor material; an insulating layer of electrically insulating material disposed over said channel region, and a gate electrode overlying said layer of electrically insulating material, wherein said layer of electrically insulating material is formed by the method which comprises: depositing a plurality of nanoparticles on said substrate in such a way that said nanoparticles form a monolayer on said substrate; wherein said nanoparticles are coated with an organic surfactant, and wherein said nanoparticles are electrically insulating with relative dielectric constant greater than 10; and optionally heating said monolayer of nanoparticles to thereby form said thin film.

Claim 43 of the application and claim 2 of 7,041,607 claims

The field effect transistor of claim 1, wherein said semiconductor material is comprised of an organic material or a hybrid organic/inorganic material.

Claim 44 of the application and claim 3 of 7,041,607 claims

The field effect transistor of claim 1, wherein said nanoparticles are formed via a non-aqueous chemical process that injects metal oxide precursors at temperatures in a range between about 60.degree. C. to about 300.degree.

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C.

Claim 45 of the application and claim 4 of 7,041,607 claims

The field effect transistor of claim 1, wherein said nanoparticles are formed in a predetermined crystalline phase by either synthesizing or heating.

Claim 46 of the application and claim 5 of 7,041,607 claims

The field effect transistor of claim 1, wherein said method further comprises the step of repeating said depositing and heating steps, thereby increasing the thickness of said thin film.

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claim 37 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 22 of U.S. Patent No. 6,737,364. Although the conflicting claims are not identical, they are not patentably distinct from each other because they each claim a dielectric thin film with a relative dielectric constant greater

than 10 comprising a crystalline structure having a grain size distribution with a standard deviation selected from the group consisting of less than 15%, less than 10% less than 5%.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Goodwin whose telephone number is (571)272-8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJG


ANDY HUYNH
PRIMARY EXAMINER